

Konstadt *et al.*¹ refer to a recent study by Dubroff *et al.*⁷ to validate the use of epicardial echocardiography as the reference measurement of ventricular volume and EF in their study. The study by Dubroff *et al.* did demonstrate a reasonably good correlation between EF calculated from cross-sectional area and EF determined angiographically. Unfortunately, the actual data were not published, and similar studies do not all corroborate this strong correlation.²⁻⁶ Therefore, for quantitative volume assessment, the authors should demonstrate good correlation with an accepted standard.

Although the data of Konstadt *et al.*¹ indicate a good correlation between epicardial and transesophageal estimates of volume and ejection, we conclude that TEE has not yet been validated as a quantitative method for left ventricular volume or ejection fraction determination.

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(Accepted for publication January 13, 1987.)

Anesthesiology
66:587-588, 1987

In Reply:—In a recent paper, we compared transesophageal and on-heart echocardiography measurements of end-diastolic area (EDa), end-systolic area (ESa), and ejection fraction area (EFa), and obtained close correlations.¹ No prior paper had compared transesophageal echocardiography (TEE) measurements with those obtained by another quantitative technique. This is important, because the determination of left ventricular cavity size by TEE is potentially inaccurate. The probe is positioned blindly and views the heart from a retrocardiac position; therefore, the possibility of acute angulation between the heart and the probe exists, and the echocardiographic images may be distorted. The purpose of our study was to determine if TEE is an accurate means to measure LV short axis areas at the level of the papillary muscles. We chose on-heart echocardiography (OHE) as a standard because it has been shown to correlate closely with the "gold-standard"—cineangiography. In addition to the study by Dubroff,² Ren *et al.* demonstrated a close correlation between ejection fraction obtained by OHE with cineangiography ($r = 0.91$).³ Furthermore, as an internal standard, we compared the ejection fraction areas obtained

by OHE with those obtained by cineangiography in our patients, and also found a good correlation ($r = 0.88$). The studies cited by Urbanowicz and Cohen that question the validity of OHE are not relevant to our study. Those studies attempted to relate echocardiographic measurements to ventricular volumes. We measured ventricular areas and calculated EFa. At no point did we attempt to derive volumes from the single short axis view measured areas. We specifically avoided this conversion because it requires several assumptions. Using the actual measurements of short axis LV areas at the level of the papillary muscles, we demonstrated a close correlation between TEE and OHE obtained measurements of EDa, ESa, and EFa. End-diastolic area and ejection fraction area are measures of end-diastolic cavity size and ejection,⁴ and, therefore, we concluded that TEE can accurately assess LV filling and ejection.

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(Accepted for publication January 13, 1987.)

Anesthesiology
66:588, 1987

What is the Correct Position of the Neck for Rapid Sequence Induction in the Patient with a "Full Stomach"?

To the Editor:—Correct positioning of the neck is important to facilitate laryngeal exposure and easy intubation, which is crucial during rapid sequence induction. Use of effective cricoid pressure to control regurgitation is also crucial during rapid sequence induction. The optimum position of the neck, however, is not the same for best laryngeal exposure and effective cricoid pressure.

In 1930, Magill,¹ in "Technique in Endotracheal Anaesthesia," described the "sniffing" position, "The position of the head in relation to the neck and trunk should be the same in the recumbent as in the erect position; this may involve the insertion of a pillow below the occiput. When the position on the table is correct, the cervical vertebrae are in normal relation to the dorsal vertebrae and are not extended . . . These, in fact, are the relative positions of the air passages instinctively adopted by a man standing in the normal erect position when he scents the air."

In 1961, Sellick² published "Cricoid Pressure to Control Regurgitation of Stomach Contents During Induction of Anaesthesia," which describes the position of the head and neck in the extended position for best occlusion of the esophagus by backward pressure on the cricoid cartilage. "The head and neck are fully extended (as in the position for tonsillectomy). This increases the anterior convexity of the cervical spine, stretches the oesophagus, and prevents its lateral displacement when pressure is applied to the cricoid."

One may ask of what clinical significance is this controversy? All clinical studies done by Salem³⁻⁵ show the neck to be hyperextended, and recommendations by Stept and Safer⁶ are that the patient's head be tilted backward. Considering that approximately 1:2000⁷ rapid sequence

intubations may fail even in the hands of an experienced anesthesiologist, the position of the cervical vertebrae in relationship to the position of the head is important. Again, what is the correct position of the head and neck for rapid sequence induction of the patient with a full stomach?

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(Accepted for publication, January 14, 1987.)